ALGEBRA I

Domain	Code	Standard Description	Essential Vocabulary
Arithmetic with Polynomials and Rational Expressions	HS-A.APR.1	Add, subtract, and multiply polynomials. Understand that polynomials form a system comparable to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication	polynomial, closure
Creating Equations and Inequalities	HS-A.CED.1	Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.	linear equations, quadratic equations, rational equations, exponential, equations, inequalities
Creating Equations and Inequalities	HS-A.CED.2	Create equations in two or more variables to represent relationships between quantities. Graph equations on coordinate axes with appropriate labels and scales.	coordinate plane, scale
Creating Equations and Inequalities	HS-A.CED.3	Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in a modeling context.	linear programming, constraint, feasible region
Reasoning with Equations and Inequalities	HS-A.REI.3	Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters	
Reasoning with Equations and Inequalities	HS-A.REI.4b	Solve quadratic equations in one variable. a) Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. (+) Derive the quadratic formula from this form. b) **Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation.** **Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.**	completing the square, quadratic formula
Reasoning with Equations and Inequalities	HS-A.REI.6	Solve systems of linear equations exactly and approximately, focusing on pairs of linear equations in two variables.	linear combination, elimination method, substitution method

	HS-A.REI.10	Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane	
	HS-A.REI.12	Graph the solutions to a linear inequality in two variables as a half-plane. Graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes	half-plane

Seeing Structure in Expressions	HS-A.SSE.3 a and c	Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.
		   a) **Factor a quadratic expression to reveal the zeros of the function it defines.**
		   b) Complete the square in a quadratic expression to produce an equivalent expression.
		   c) **Use the properties of exponents to transform exponential expressions.**
			equivalent form, quadratic function, zero of a function, complete the square, maximum, minimum, vertex, exponent, exponential, rate of growth or decay

Seeing Structure in Expressions	HS-F.IF.2	Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	function notation

	HS-F.IF.7a	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.
		      Graph linear and quadratic functions and show intercepts, maxima, and minima where appropriate.
		   a) Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.
		   b) Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.
		   c) (+) Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.
		   d) Graph exponential and logarithmic functions, showing intercepts and end behavior.
		   e) Graph $f(x) = sin\ x$ and $f(x) = cos\ x$ as representations of periodic phenomena.
		   (+) Graph trigonometric functions, showing period, midline, phase shift and amplitude.
			Intercepts, maximum, minimum, end behavior

	HS-F.IF.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions	

Linear, Quadratic, and Exponential Models	HS-F.LE.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a table, a description, or two input-output pairs given their relationship.	
The Real Number System	HS-N.RN.4	Perform basic operations on radicals and simplify radicals to write equivalent expressions	radicals, rationalizing the denominator
Interpreting Categorical and Quantitative Data	HS-S.ID.7	Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. Interpolate and extrapolate the linear model to predict values.	Interpolate, extrapolate